MBC Series IEC62056-21 Protocol Auto Baud Changer User Manual

1. About MBC Series IEC62056-21 Protocol Auto Baud Changer

MBC Series IEC62056-21 Protocol Auto Baud Changer are designed to be used with IEC meters. The meters that supports IEC62056-21 has baud change over during transmission may be hard to monitor over remote modems. MBC Series IEC62056-21 Protocol Auto Baud Changer makes this implementation possible and easy. It detects the protocol transferred from modem side to meter side and vice versa and automatically changes baud rate based on protocol definition during transmission. It can for example be used to remotely read meters via optical probe remotely.

2. Hardware Features

MBC Series IEC62056-21 Protocol Auto Baud Changer has 2-way communication. One side connected directly or via optical probe to meter, other side can be connected to a modem or serial device server.

2.1 Features

- Wide range power option 3,3V – 28V DC
- Wide operating temperature range from -40 to 85 °C
- Very Small form factor, only 2.1 x 4.2 x 4.4cm
- ABS, IP40 housing
- Firmware upgradable over serial line
- Meter side is always RS485 and Modem side RS232 or RS485 versions are available

3. Installation

MBC Series IEC62056-21 Protocol Auto Baud Changer has very small form factor only 2.1 x 4.2 x 4.4cm. Thus, it can be acted as part of cable and no need special mounting. Simply connect cables and use as a part of cable.

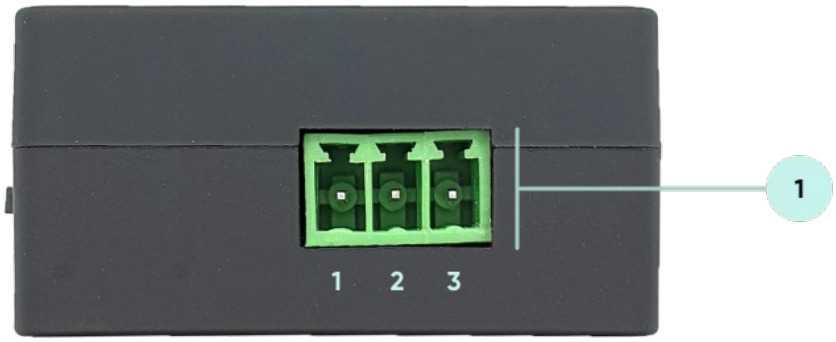
4. Panel Descriptions and Pin Mappings

4.1 Modem Side: MBC141

1. DB9 Male connector for RS232: Only Tx-Rx-GND for data transmission

Pin Number	Description
1	Not Used
2	Rx
3	Tx
4	Not Used
5	GND
6	Not Used
7	Not Used
8	Not Used
9	Not Used

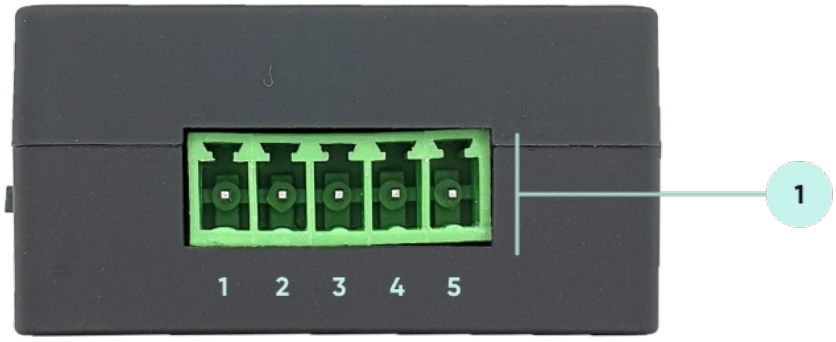
4.2 Modem Side: MBC144



1. Terminal Connector for 2 wire RS485 connection and GND.

Pin Number	Description
1	GND
2	A
3	B

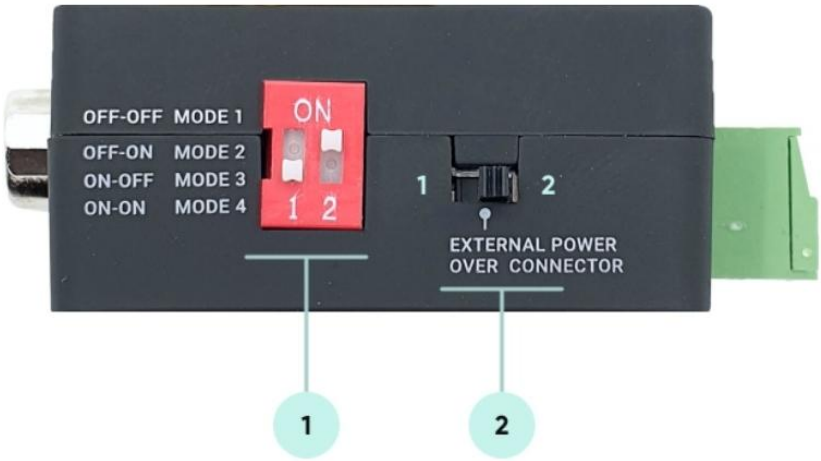
4.3 Meter Side



1. Terminal Connector for 2 wire RS485 connection and GND. Terminal also has external power input pins.

Pin Number	Description
1	Input Power + (3,3V - 28V DC)
2	Input Power - GND
3	GND
4	A
5	B

4.4 Other Side: MBC141



1. Operation Mode Selection Switch

Pin Positions (1-2)	LED Status	Modem Side Communication Data Type	Meter Side Communication Data Type
OFF-OFF	Mode 1 LED ON	19200 8N1	Starts with 300 Baud and changes to Target Speed based on protocol implementation of IEC62056-21
OFF-ON	Mode 2 LED ON	9600 8N1	Starts with 300 Baud and changes to Target Speed based on protocol implementation of IEC62056-21

ON-OFF	Mode 3 LED ON	19200 7E1	Starts with 300 Baud and changes to Target Speed based on protocol implementation of IEC62056-21
ON-ON	Mode 4 LED ON	9600 7E1	Starts with 300 Baud and changes to Target Speed based on protocol implementation of IEC62056-21

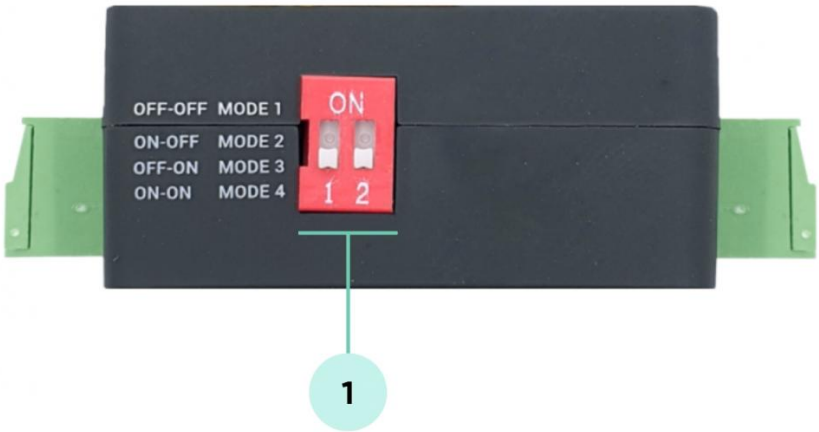
☝

NOTE: After changing operating mode of device, device must be repowered to apply new setting.

2. Power Input Selection Switch

Pin Position	Description
1	Power OFF
2	Power ON from External Power SOurce

4.5 Other Side: MBC144



1. Operation Mode Selection Switch

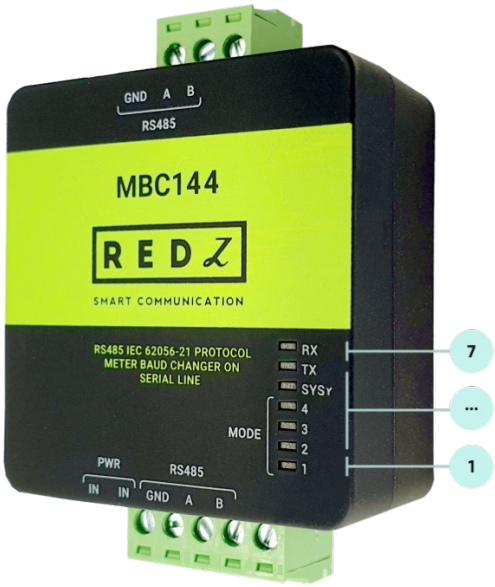
Pin Positions (1-2)	LED Status	Modem Side Communication Data Type	Meter Side Communication
OFF-OFF	Mode 1 LED ON	19200 8N1	Starts with 300 baud rate and changes during transmission to target baud rate based on IEC62056-21 protocol
			Starts with 300

ON-OFF	Mode 2 LED ON	9600 8N1	baud rate and changes during transmission to target baud rate based on IEC62056-21 protocol
OFF-ON	Mode 3 LED ON	19200 7E1	Starts with 300 baud rate and changes during transmission to target baud rate based on IEC62056-21 protocol
ON-ON	Mode 4 LED ON	9600 7E1	Starts with 300 baud rate and changes during transmission to target baud rate based on IEC62056-21 protocol

☝

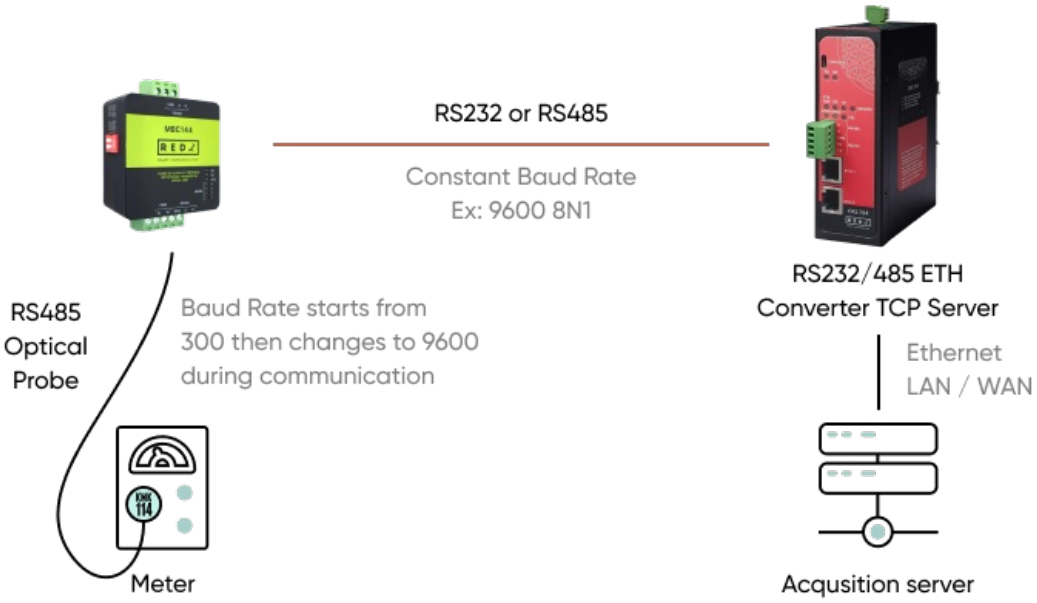
NOTE: After changing operating mode of device, device must be repowered to apply new setting.

4.6 Top Side



LED Number	Description
1	Mode 1 LED
2	Mode 2 LED
3	Mode 3 LED
4	Mode 4 LED
5	System LED: Blinks every second
6	Tx LED: Sending data from Modem Side to Meter Side
7	Rx LED: Receiving data from Meter Side to Modem Side

5. Connection Diagram



6. Firmware Upgrade

☝

WARNING: Firmware upgrade is available from Modem side Serial Line only

RS232 on MBC141

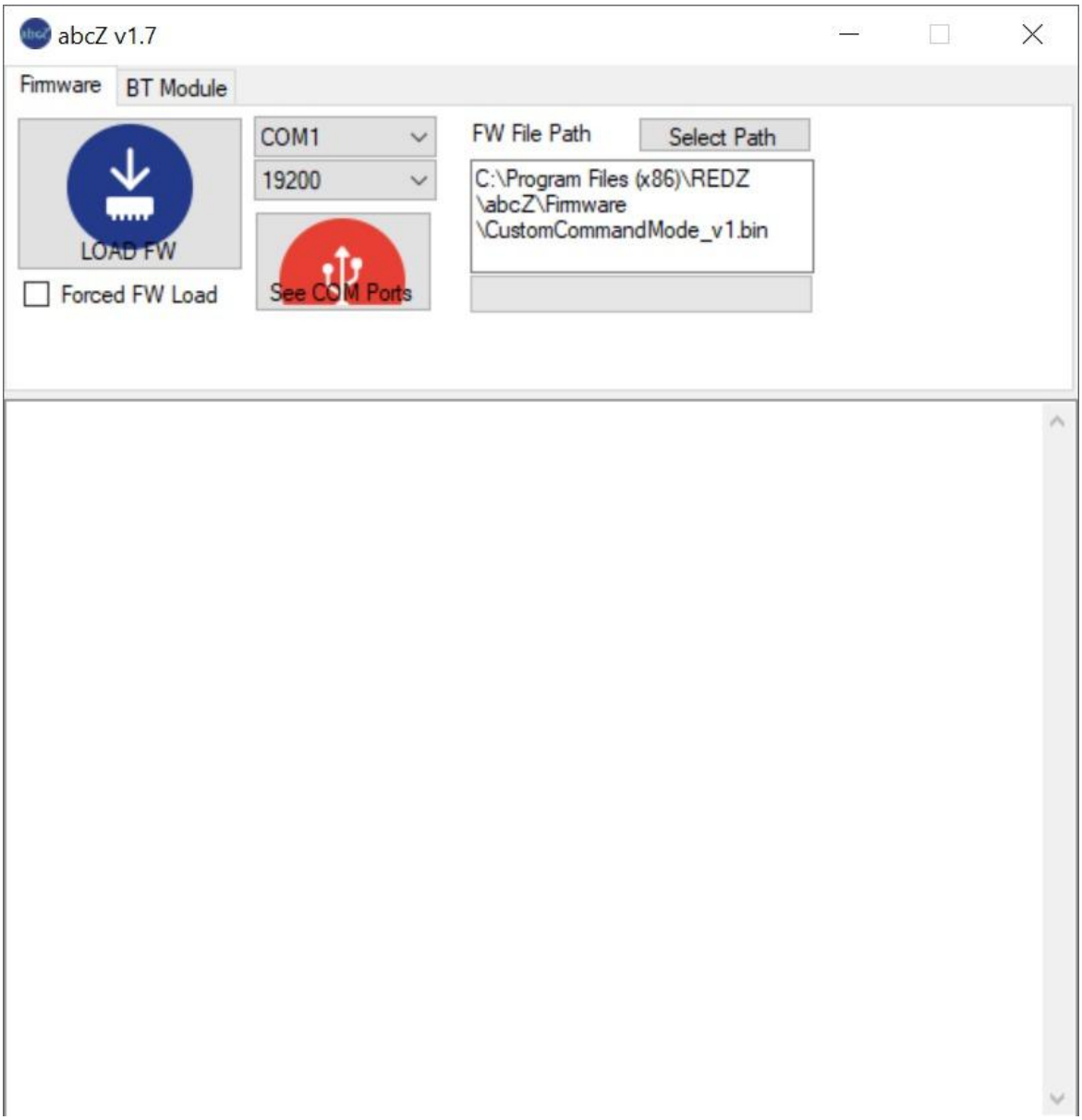
RS485 on MBC144

Device must be on operating mode 19200 8N1 for firmware upgrade process.

MBC Series IEC62056-21 Protocol Auto Baud Changer has capability to upgrade firmware from serial line of Modem side. This way the user can get latest updates for device operation and also user may also ask for changes. Here are some examples:

- Firmware upgrade for specific meter model and protocol implementation
- Firmware upgrade to disable switches and work only in one mode
- Firmware upgrade to put any feature that user needs

Firmware upgrade procedure need specific firmware file prepared by our company and the firmware upgrade software abcZ software also developed by our company.



In order to use the software the specific firmware must be selected. After selecting the firmware path by clicking "Select Path" button the firmware can be loaded to device. The device has protection time window 10 seconds after the powered up so the process must be started within 10 seconds after the device powered up.

User can select the correct COM port and click "LOAD FW" button. Both the software and the device will show the percentage of process visually by process bar in software and by LEDs (work mode LEDs) on device (once %25 of process finished LED1 will be on and continue with LED2,3 and finish with LED4 after %100 finished). The process will take less than a minute and the device will be ready to use with new firmware after an automatic restart.

If somehow the firmware upgrade process is interrupted and upload file has failed, the device will lose firmware and stay in bootloader mode. In that case user can try upgrading the firmware again and this time should mark the "Forced FW Load" check box.

7. Ordering Information

MBC141: Modem side RS232, Meter side RS485 IEC 62056-21 Protocol Meter Baud Changer on Serial Line

MBC144: Modem side RS485, Meter side RS485 IEC 62056-21 Protocol Meter Baud Changer on Serial Line

8. Product Selection

Model	3.3-28V DC Power input	Power Input via RS232 Serial Line	Operating Mode Selections	Modem Side RS232 DB9 Female Connector	Modem Side RS485 Terminal Connector	Power Input Type Selection	Firmware Upgrade Over Serial Line
MBC141	X	X	X	X		X	X
MBC144	X		X		X		X